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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/038,100      | 01/03/2002  | Michael Edwin Kuhn   | N1305-022           | 5350             |

32905 7590 04/21/2003

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EXAMINER

FOX, DAVID T

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1638

DATE MAILED: 04/21/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

|                               |                             |
|-------------------------------|-----------------------------|
| Application No.<br>10/038,100 | Applicant(s)<br>Kuehn et al |
| Examiner<br>FOX               | Group Art Unit<br>1638      |

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE -3- MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

## Status

- ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1-32 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1-32 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
  - ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
  - ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.
  - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

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Claims 1, 9 and 18 are objected to for their inclusion of blanks (\_\_\_\_\_). It is assumed that the blanks will be replaced by an ATCC Accession Number.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6, 8, 10-17, 19, 21, 23-24, 28-29 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6, 24 and 29 are indefinite for characterizing their plants as either male sterile or comprising a transgene or single gene conversion, wherein the plants of the claims from which they depend do not possess these traits or genes. For example, it is confusing to newly characterize the male fertile plant of claim 2 as being male sterile in claim 6.

Claims 8, 19, 21, 23, 28 and 32 are indefinite in their employment of improper Markush terminology. Insertion of --or-- before "hypocotyls" in the last line of claim 8, and insertion of --and-- before "well" in the last line of the remaining claims, would overcome this rejection. In addition, a period needs to be inserted at the end of claim 8.

Claims 10, 14 and dependents are indefinite because they are substantial duplicates. In addition, claim 14 is incomplete for failing to recite an essential method step, namely the production of seed, in the body of the claim. Cancellation of claim 14 would obviate this rejection.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-32 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The invention appears to employ novel plants. Since the plant is essential to the claimed invention it must be obtainable by a repeatable method set forth in the specification or otherwise be readily available to the public. If the plant is not so obtainable or available, the requirements of 35 USC 112 may be satisfied by a deposit of the plant. A deposit of 2500 seeds of each of the claimed embodiments is considered sufficient to ensure public availability. The specification does not disclose a repeatable process to obtain the plant and it is not apparent if the plant is readily available to the public. It is noted that applicants have deposited the plant but there is no indication in the specification on page 32 as to viability or duration of deposit. If the deposit is made under the terms of the Budapest Treaty, then an affidavit or declaration by applicants, or a statement by an attorney of record over his or her signature and registration number, stating that the specific strain has been deposited under the Budapest Treaty and that the strain will be irrevocably and without restriction or condition released to the public upon the issuance of a patent, would satisfy the deposit requirement made herein.

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If the deposit has not been made under the Budapest Treaty, then in order to certify that the deposit meets the criteria set forth in 37 C.F.R. 1.801-1.809, applicants may provide assurance of compliance by an affidavit or declaration, or by a statement by an attorney of record over his or her signature and registration number, showing that

- (a) during the pendency of this application, access to the invention will be afforded to the Commissioner upon request;
- (b) all restrictions upon availability to the public will be irrevocably removed upon granting of the patent;
- (c) the deposit will be maintained in a public depository for a period of 30 years or 5 years after the last request or for the effective life of the patent, whichever is longer;
- (d) a test of the viability of the biological material at the time of deposit (see 37 CFR 1.807); and,
- (e) the deposit will be replaced if it should ever become inviable.

Claims 6, 11-13, 15-17, and 19-32 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are broadly drawn to any transgenic plant which contains any heterologous coding sequence conferring any trait. The claims are also broadly drawn to any "single gene

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conversion" plant comprising one or more traits introgressed into the claimed variety by backcrossing or other traditional means. The claims are also broadly drawn to any hybrid produced by crossing the exemplified inbred line with any of a multitude of non-exemplified inbreds, or any descendant of the exemplified cultivar obtained by using that cultivar as one parent in a series of undisclosed crosses for an undisclosed number of generations and with undisclosed breeding partners. The claims are also broadly drawn to methods of using the transgenic plants, single gene conversion plants, descendant plants, or hybrid plants.

No guidance has been provided for the description or characterization of a multitude of heterologous coding sequences conferring a multitude of traits. In addition, no guidance has been provided for the introgression of any trait from a multitude of non-disclosed and uncharacterized parentals into the claimed variety, wherein said introgression should result in successful expression of the desired trait but should not interfere with the expression of the remaining traits whose combination confers patentability to the instantly exemplified variety, and which introgression should not introduce unwanted linked genetic material into the exemplified cultivar which would disrupt its patentably unique genetic complement. In addition, no guidance has been provided regarding the genetic or morphological characteristics of any of a multitude of breeding partners, or the resultant progeny.

The Federal Circuit has recently clarified the application of the written description requirement. The court stated that a written description of an invention "requires a precise definition, such as by structure, formula, [or] chemical name, of the claimed subject matter

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sufficient to distinguish it from other materials.” *University of California v. Eli Lilly and Co.*, 119 F.3d 1559, 1568; 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). The court also concluded that “naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material.” *Id.* Further, the court held that to adequately describe a claimed genus, Patent Owner must describe a representative number of the species of the claimed genus, and that one of skill in the art should be able to “visualize or recognize the identity of the members of the genus.” *Id.*

Given the claim breadth and lack of guidance as discussed above, the specification fails to provide an adequate written description of the genus as broadly claimed. Given the lack of written description of the claimed products, any method of using them would also be inadequately described. Accordingly, one skilled in the art would not have recognized Applicants to have been in possession of the claimed invention at the time of filing. See Written Description Requirement guidelines published in Federal Register/ Vol. 66, No. 4/ Friday January 5, 2001/ Notices: pp. 1099-1111).

Claims 6, 11-13, 15-17 and 19-32 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims are broadly drawn to any transgenic plant which contains any heterologous coding sequence conferring any trait. The claims are also broadly drawn to any “single gene

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conversion" plant comprising one or more traits introgressed into the claimed variety by backcrossing or other traditional means. The claims are also broadly drawn to any hybrid produced by crossing the exemplified inbred line with any of a multitude of non-exemplified inbreds, or any descendant of the exemplified cultivar obtained by using that cultivar as one parent in a series of undisclosed crosses for an undisclosed number of generations and with undisclosed breeding partners. The claims are also broadly drawn to methods of using the transgenic plants, single gene conversion plants, descendant plants, or hybrid plants.

No guidance has been provided for the description or characterization of a multitude of heterologous coding sequences conferring a multitude of traits, including improved nutritional quality. In addition, no guidance has been provided for the introgression of any trait from a multitude of non-disclosed and uncharacterized parentals into the claimed variety, wherein said introgression should result in successful expression of the desired trait but should not interfere with the expression of the remaining traits whose combination confers patentability to the instantly exemplified variety, and which introgression should not introduce unwanted linked genetic material into the exemplified cultivar which would disrupt its patentably unique genetic complement. In addition, no guidance has been provided regarding the genetic or morphological characteristics of any of a multitude of breeding partners, or the resultant progeny.

Hunsperger et al (1996, U.S. Patent 5,523,520), Kraft et al (2000, Theor. Appl. Genet. 101:323-326), and Eshed et al (1996, Genetics 143:1807-1817) teach that it is unpredictable whether the gene or genes responsible for conferring a phenotype in one plant genotypic



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background may be introgressed into the genetic background of a different plant, to confer a desired phenotype in said different plant. Hunsperger et al teach that the introgression of a gene in one genetic background in any plant of the same species, as performed by sexual hybridization, is unpredictable in producing a single gene conversion plant with a desired trait (see, e.g., column 3, lines 26-46). In particular, Hunsperger et al teach that a gene conferring miniature plant stature which has been identified and genetically stabilized in one cultivar of *Petunia hybrida*, a member of the Solanaceae, does not confer a miniature phenotype when introgressed into the genome of a variety of other *Petunia hybrida* cultivars (see, e.g., column 3, lines 40-41).

Kraft et al teach that linkage disequilibrium effects and linkage drag prevent the making of plants comprising a single gene conversion, and that such effects are unpredictably genotype-specific and loci-dependent in nature (see, e.g., page 323). Kraft et al teach that linkage disequilibrium is created in breeding materials when several lines become fixed for a given set of alleles at a number of different loci, and that very little is typically known about the plant breeding materials, which contributes to the unpredictability of the effect. Eshed et al teach that in plants, epistatic genetic interactions from the various genetic components comprising contributions from different genomes may affect quantitative traits in a genetically complex and less than additive fashion (see, e.g., page 1815).

Given the claim breadth, unpredictability, and lack of guidance as discussed above, undue experimentation would have been required by one skilled in the art to identify a multitude of non-

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exemplified transgenes, or to develop and evaluate methods for introgressing single traits into the claimed inbreds without otherwise disrupting its unique genetic complement.

The following amendments would obviate the rejections under 35 USC 112, first paragraph, stated above:

Cancel claims 6, 11-13, 15-17 and 19-32.

Submit new claims 33-46 as follows (basis in the specification can be found on pages 20-27; see in particular page 25 for claims 41-46).

--Claim 33 (new). A method for producing a male sterile tomato plant comprising transforming the tomato plant of claim 2 with a nucleic acid molecule that confers male sterility.

Claim 34 (new). A male sterile tomato plant produced by the method of claim 33.

Claim 35 (new). A method for producing an herbicide resistant tomato plant comprising transforming the tomato plant of claim 2 with a nucleic acid molecule that confers herbicide resistance.

Claim 36 (new). An herbicide resistant tomato plant produced by the method of claim 35.

Claim 37 (new). A method for producing an insect resistant tomato plant comprising transforming the tomato plant of claim 2 with a nucleic acid molecule that confers insect resistance.

Claim 38 (new). An insect resistant tomato plant produced by the method of claim 37.

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Claim 39 (new). A method for producing a disease resistant tomato plant comprising transforming the tomato plant of claim 2 with a nucleic acid molecule that confers resistance to bacterial, fungal or viral disease.

Claim 40 (new). A disease resistant tomato plant produced by the method of claim 39.

Claim 41 (new). A method for producing a tomato plant which produces fruits whose pulp or juice exhibits improved viscosity, comprising transforming the tomato plant of claim 2 with a nucleic acid molecule that confers improved viscosity to the pulp or juice of tomato fruits.

Claim 42 (new). A tomato plant which produces fruits whose pulp or juice has improved viscosity, said plant produced by the method of claim 41.

Claim 43 (new). A method for producing a tomato plant with improved ripening control comprising transforming the tomato plant of claim 2 with a nucleic acid molecule that confers improved ripening control.

Claim 44 (new). A tomato plant with improved ripening control produced by the method of claim 43.

Claim 45 (new). A method for producing a tomato plant with improved flooding tolerance comprising transforming the tomato plant of claim 2 with a nucleic acid molecule that confers improved flooding tolerance.

Claim 46 (new). A tomato plant with improved flooding tolerance produced by the method of claim 45.--

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21, 23, 28 and 32 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over each of Nahum (U.S. 4,843,186) and Morrison et al (U.S. 5,438,152).

The claims are broadly drawn to tomato plants descended from inbred 294, following multiple generations of outcrossing with non-294 parents, or following somaclonal variation-inducing tissue culture regeneration of progeny. The descended tomato plants exhibit at least two traits which are also exhibited by '294', including resistance to Fusarium or Verticillium wilts, resistance to Root Knot nematode, and determinate growth.

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Each of Nahum and Morrison et al teach tomato plants which exhibit at least two traits also exhibited by 294. Nahum teaches a tomato plant with determinate growth and resistance to Fusarium Wilt races one and two (see, e.g., columns 3-4). Nahum also teaches that the tomato plant exhibits several other traits exhibited by '294', such as anthocyanin in seedlings, normal seedling habit, normal plant form, medium canopy size, semi-erect habit, sparsely hairy pubescence on younger stems, normal leaf pubescence, yellow corolla, fused anthers, and absent fasciation (see, e.g., columns 3-4).

Morrison et al teach a tomato plant with resistance to Fusarium wilt races 1 and 2, and Verticillium wilt race 1 (see, e.g., column 5, lines 42-54).

The tomato plants taught by the prior art differ from the claimed tomato plants only in their method of making, namely the use of '294' as a descendant somewhere in their pedigree. However, the method of making the claimed tomato plants would not distinguish the plants per se from the prior art tomato plants; given the loss of '294'-derived genetic material with every generation of outcross to a non-294 parent, the alteration of 294-derived genetic material following somaclonal variation induced by tissue culture, and the lack of uniqueness of the individual traits or the gene(s) encoding them to '294'. See *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), which teaches that a product-by-process claim may be properly rejectable over prior art teaching the same product produced by a different process, if the process of making the product fails to distinguish the two products.

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Claims 21, 23, 28 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Hoogstraten (U.S. 6,414,226 filed March 2000).

Hoogstraten teaches tomato plants which are resistant to Root Knot nematode and have determinate growth (see, e.g., column 5, lines 30-31 and 44-45). Hoogstraten also teaches tomato plants which have other '294' characteristics such as present peduncle abscission layer (see, e.g., column 5, lines 31-32).

The tomato plants taught by the prior art differ from the claimed tomato plants only in their method of making, namely the use of '294' as a descendant somewhere in their pedigree. However, the method of making the claimed tomato plants would not distinguish the plants per se from the prior art tomato plants; given the loss of 294-derived genetic material with every generation of outcross to a non-294 parent, the alteration of 294-derived genetic material following somaclonal variation induced by tissue culture, and the lack of uniqueness of the individual traits or the gene(s) encoding them to '294'. See *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), which teaches that a product-by-process claim may be properly rejectable over prior art teaching the same product produced by a different process, if the process of making the product fails to distinguish the two products.

Claims 1-20, 22, 24-27 and 29-31 are deemed free of the prior art, given the failure of the prior art to teach or suggest the exemplified tomato inbred which possesses a unique genetic complement and unique collection of traits including resistance to various fungal diseases and

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nematodes, medium maturity time, and slight marginal leaf rolling with a mid-season onset, as set forth on pages 11-13 of the instant specification; or methods of their use.

No claim is allowed.

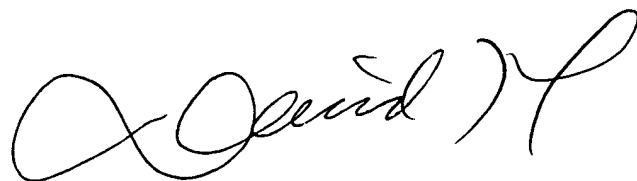
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David T. Fox whose telephone number is (703) 308-0280. The examiner can normally be reached on Monday through Friday from 10:30AM to 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson, can be reached on (703) 306-3218. The fax phone number for this Group is (703) 872-9306. The after final fax phone number is (703) 872-9307.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

April 17, 2003

DAVID T. FOX  
PRIMARY EXAMINER  
GROUP 180-1638

A handwritten signature in cursive script, appearing to read "David T. Fox", written in black ink.